

## REMARKS

This application has been reviewed in light of the Office Action dated January 8, 2003. Claims 1, 3-18, 20-35, 37-52, 54-66, 68-80, and 82-93 are presented for examination. Independent claims 1, 18, 35, 52, 66, and 80 have been amended to define even more the salient features of the present invention. Favorable reconsideration is requested.

Claims 1, 3-10, 18, 20-27, 35, 37-44, 52, 54-61, 66, 68-75, 80 and 82-89 were rejected under 35 U.S.C. §102(b) as being anticipated by *Modestino et al.* (IEEE Paper ISBN: 0162-8828; A Markov Random Field Model-Based Approach to Image Interpretation). Claims 11, 17, 28, 34, 45, 62-65, 76-79 and 90-93 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Modestino et al.* in view of U.S. Patent No. 5,930,783 (*Li et al.*). Claims 12-16, 29, and 46-51 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Modestino et al.* in view of *Li et al.* and U.S. Patent No. 6,360,234 (*Jain et al.*). Claims 30-33 were rejected under 35 U.S.C. §103(a) as being unpatentable over *Modestino et al.* in view of *Jain et al.*

This rejection is respectfully traversed. However, prior to setting forth her bases for traversal, Applicant would like to briefly discuss the subject matter of the present invention and *inter alia*, its patentable nature over the prior art.

The aspect of the present invention set forth in claim 1 is a method of classifying a digital image. As recited in the claim, an image is segmented into substantially homogeneous regions and the regions are processed to provide a region adjacency graph. The region adjacency graph represents spatial adjacency between the regions, where each of the regions of the region adjacency graph is associated with at least one of a plurality of predetermined semantic labels. The region adjacency graph is

analyzed to identify predetermined patterns of the semantic labels. One of a plurality of predetermined stereotypes is assigned to the digital image according to each identified pattern of semantic labels, such that the assigned stereotype represents a classification of the digital image.

Among the important features of claim 1 are (1) analyzing the region adjacency graph to identify predetermined patterns of the semantic labels and (2) assigning one of a plurality of predetermined stereotypes to the digital image according to each identified pattern of the semantic labels.

However, *Modestino et al.* fails to analyze the region adjacency graph to identify predetermined patterns of the semantic labels<sup>1</sup>, as recited in claim 1. In contrast *Modestino et al.* merely models the interpretation labels *I* as an MRF on the region adjacency graph

As described in the specification at page 14, lines 12 to 19, many stereotypes can be generated from lower-level analysis of the Region Adjacency Graph. In one example, a beach scene can be classified as a sky region, a water region and a sand region. *Modestino et al.* at best teaches only applying low level interpretation labels. *Modestino et al.* does not teach or suggest a higher level expression by associating a stereotype with a plurality of semantic labels. Although the Examiner states Fig. 1(a) of *Modestino et al.* depicts a “rural road scene” being associated with the labels “field”, “sky”, “road” and “car”, *Modestino et al.* does not at all teach such association.

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In the *Modestino et al.* method, an image is segmented into a collection of disjoint regions denoted by *R* that form the nodes of an adjacency graph. Interpretation labels denoted by *I* are assigned to the segmented regions using domain knowledge, extracted feature measurements, and spatial relationships between the various regions, as shown by the example of Fig. 1 of *Modestino et al.*

For at least the above reasons, independent claim 1 is believed clearly patentable over *Modestino et al.* Nor are these deficiencies addressed by the secondary references of *Li et al.* or *Jain et al.*

*Li et al.* is cited as only showing a computer implemented method for searching and retrieving images using semantic and cognitive methodologies. *Li et al.* does not analyze the region adjacency graph to identify predetermined patterns of semantic labels associated with the regions, or assign predetermined stereotypes to the digital image according to the identified pattern, as recited in claim 1.

*Jain et al.* is cited simply as teaching providing metadata including stereotypes associated with the digital image.

Claims 18 and 35 are apparatus and computer program product claims, respectively, corresponding to method claim 1, and are believed to be patentable for at least the same reasons as discussed above in connection with claim 1. Similarly, claims 52, 66, and 80 also recite analyzing the region adjacency graph to identify predetermined patterns of the semantic labels associated with the regions and assigning one of a plurality of predetermined stereotypes to the digital image according to each identified pattern of the semantic labels associated with the regions, such that the assigned stereotype represents a classification of the digital image, as discussed above in connection with claim 1.

A review of the other art of record has failed to reveal anything which, in the Applicant's opinion, would remedy the deficiency of the art discussed above, as references against the independent claims herein. Those claims are therefore believed to be patentable over the other art of record.

This Amendment After Final Action is believed clearly to place this application in condition for allowance and, therefore, its entry is believed proper under 37

C.F.R. § 1.116. Accordingly, entry of this Amendment After Final Action, as an earnest effort to advance prosecution and reduce the number of issues, is respectfully requested. Should the Examiner believe that issues remain outstanding, it is respectfully requested that the Examiner contact Applicant's undersigned attorney in an effort to resolve such issues and advance the case to issue.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicant's undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,



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